

What is claimed is:

1. A variable view arthroscope with a plurality of viewing positions in a viewing range between a first end viewing position and a second end viewing position, comprising:

a tubular housing having a longitudinal axis and an input end;

an input lens in the input end of the housing, the input lens being rotatable around a first axis relative to the housing;

a mirror in the input end of the housing, the mirror being rotatable around the first axis relative to the housing; and

a CCD in the housing, the CCD having a receptor surface;

wherein an optical path is defined such that object rays received at the input end pass through the input lens, reflect from the mirror and impinge on the receptor surface, and wherein the movement of the input lens and the first mirror varies the view of the arthroscope.

2. The variable view arthroscope of claim 1, further comprising a prism disposed in the optical path between the mirror and the receptor surface.

3. The variable view arthroscope of claim 2, wherein the prism is fixed.

4. The variable view arthroscope of claim 1, further comprising a focusing lens disposed in the optical path between the mirror and the receptor surface.

5. The variable view arthroscope of claim 4, wherein the focusing lens and the CCD are arranged so that the object rays are focused from the focusing lens onto the receptor surface of the CCD.

6. The variable view arthroscope of claim 5, wherein the optical axis of the focusing lens is parallel to the longitudinal axis of the housing tube.

7. The variable view arthroscope of claim 4, further comprising a prism disposed in the optical path between the mirror and the receptor surface.

- 1 8. The variable view arthroscope of claim 7, wherein the prism and the focusing lens are
2 arranged so that object rays reflect from the prism into the focusing lens.
- 3 9. The variable view arthroscope of claim 8, wherein the focusing lens is coaxial with the
4 prism.
- 5 10. The variable view arthroscope of claim 1, wherein the length of a rim object ray from the
6 input lens to the CCD is the same in the plurality of viewing positions.
- 7 11. The variable view arthroscope of claim 10, wherein the length of the two rim object rays
8 from the input lens to the CCD is the same in the plurality of viewing positions.
- 9 12. The variable view arthroscope of claim 11, wherein the length of the two object rim rays are
10 equal to each other in the plurality of viewing positions.
- 11 13. The variable view arthroscope of claim 1, wherein the first mirror is rotatable by
12 approximately 30 degrees between the first end viewing position and the second end viewing
13 position.
- 14 14. The variable view arthroscope of claim 1, wherein the middle viewing position in the
15 viewing range is at an angle about 45 degrees from the longitudinal axis.
- 16 15. The variable view arthroscope of claim 1, wherein the viewing range is greater than 100
17 degrees.
- 18 16. The variable view arthroscope of claim 1, wherein the input lens has a first angular change
19 between a first viewing position and a second viewing position and first mirror has a second
20 angular change between the first viewing position and the second viewing position, and the
21 second angular change is half the first angular change.
- 22 17. A variable view arthroscope with a plurality of viewing positions in a viewing range between
23 a first end viewing position and a second end viewing position, comprising:
24 a tubular housing having a longitudinal axis and an input end;

1 an input lens in the input end of the housing, the input lens having a focal plane, the input
2 lens being rotatable relative to the housing; and

3 a CCD in the input end of the housing, the CCD having a receptor surface disposed in the
4 focal plane of the input lens and being rotatable relative to the housing;

5 wherein an optical path is defined such that object rays received at the input end pass
6 through the input lens and impinge on the receptor surface, and wherein the movement of the
7 input lens and the CCD varies the view of the arthroscope.

8 18. The variable view arthroscope of claim 17, wherein the distance and the angle between the
9 input lens and the CCD do not vary when the view of the arthroscope is varied.

10 19. The variable view arthroscope of claim 17, wherein the input lens and the CCD are mounted
11 on an input lens frame and the input lens frame pivots around a first axis to vary the view of
12 the arthroscope.

13 20. The variable view arthroscope of claim 17, wherein the input lens has a first angular change
14 between a first viewing position and a second viewing position and the CCD has a second
15 angular change between the first viewing position and the second viewing position, and first
16 angular change and the second angular change are the same.